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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/067,075	02/04/2002	Toshihiro Omi	NGB-12970	4068
40854	7590	07/06/2005	EXAMINER	
RANKIN, HILL, PORTER & CLARK LLP 4080 ERIE STREET WILLOUGHBY, OH 44094-7836			YAM, STEPHEN K	
			ART UNIT	PAPER NUMBER
			2878	
DATE MAILED: 07/06/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

in

<b>Office Action Summary</b>	<b>Application No.</b> 10/067,075	<b>Applicant(s)</b> OMI, TOSHIHIRO	
	<b>Examiner</b> Stephen Yam	<b>Art Unit</b> 2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 25 April 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-15 is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4-8 is/are rejected.
- 7) ☒ Claim(s) 3 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

This action is in response to Amendments and remarks filed on April 25, 2005. Claims 1-15 are currently pending.

#### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 2, and 4-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasuda JP 01-097813 (see attached translation) in view of Igaki US Patent No. 5,327,218.

Regarding Claims 1 and 4-8, Yasuda teaches an emitting light source apparatus of a reflection-type for use in an optical encoder which applies light to a reflecting scale (16) having an optical grating (see Page 9, lines 21-22) formed along an axis of measurement and which receives the reflected light from the scale with a light-receiving element (26) to output a displacement signal (see Page 10, lines 9-10), said apparatus comprising a lead frame (30) disposed opposite to said scale, a light-emitting chip (24) (see Page 11, lines 4-5) mounted on said leadframe, said light-emitting chip having a light-emitting surface (left to right, and orthogonal to the view of the drawing) substantially orthogonal to an optical grating surface of said scale (see Fig. 1) and in a direction of the optical grating (see Fig. 1 and 2), and a molded transparent resin (32) sealing both the light-emitting chip and said leadframe, wherein said transparent resin includes a first optical element (28) provided at an end face of said molded

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transparent resin which faces the light-emitting surface of said light-emitting chip (see Fig. 2), and a second optical element (29) provided at the other end face of said molded transparent resin which is remote from the light-emitting surface of said light-emitting chip (see Fig. 2), said first optical element reflecting the light from said light-emitting chip substantially parallel to the optical grating surface and in a direction orthogonal to the direction of the optical grating (see Fig. 1 and 2), said second optical element reflecting the parallel light from said first optical element toward the optical grating and illuminating the optical grating over a specified area (see Fig. 2) in the direction of the optical grating on the optical grating as the reflected parallel light is directed toward the optical grating. Regarding Claim 4, Yasuda teaches said first optical element includes a spherical or aspheric lens (28) having the focus at said light-emitting chip (see Fig. 2). Regarding Claim 5, Yasuda teaches a reflective film formed on an outside surface of said first or second optical element (see Page 11, lines 16-20). Regarding Claim 6, Yasuda teaches said light-receiving element formed integrally to the said emitting light source apparatus (see Page 17, lines 18-20). Regarding Claim 7, Yasuda teaches the light-emitting chip positioned above the light-receiving element (see Fig. 2- wherein the device is oriented such that (18) is the *left*-most component in the device). Regarding Claim 8, Yasuda teaches the second optical element positioned above the light-receiving element (see Fig. 2- wherein the device is oriented such that (18) is the *right*-most component in the device). Yasuda does not teach the reflected parallel light *converged* toward the optical grating or the second optical element focusing the reflected light toward the optical grating. Igaki teaches (see Fig. 6) a similar device, with a second optical element (2) that converges and focuses light from a light source (1) toward an optical grating (4). It would have been obvious to one of ordinary skill in the art at the time the invention was made

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to combine the second optical element of Igaki with the second optical element of Yasuda (thereby providing both a lens and mirror as the "optical element", or alternatively by combining the two components into a single integrated unit such as a concave mirror or a prism having a lens portion), in the apparatus of Yasuda, to increase the resolution of the measuring abilities of the optical encoder, as taught by Igaki (see Col. 1, lines 58-61, Col. 3, lines 4-23, and Col. 4, lines 56-66).

Regarding Claim 2, Yasuda in view of Igaki teach the apparatus in Claim 1, according to the appropriate paragraph above. Yasuda also teaches said second optical element reflecting the parallel light from said first optical element toward the optical grating (see Fig. 2) and illuminating the optical grating over an area taller than a height of said light-receiving element as said reflected parallel light is directed toward the optical grating. Yasuda does not teach illuminating the optical grating over an area *wider* than a *length* of the light-receiving element in the direction of the optical grating. It is well known in the art in an optical sensor to provide illumination for a detection target over a greater area than the view of the detector, to ensure that the entire viewing window of the detector is fully illuminated. It would have been obvious to one of ordinary skill in the art at the time the invention was made to illuminate the grating over an area *wider* than a *length* of the light-receiving element in the direction of the optical grating, in the apparatus of Yasuda in view of Igaki, to ensure complete illumination of the entire detection window for maximal detection contrast.

### ***Response to Arguments***

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3. Applicant's arguments with respect to claims 1, 2, and 4-8 have been considered but are moot in view of the new ground(s) of rejection.

***Allowable Subject Matter***

4. Claims 9-15 are allowed over the prior art of record.

5. Claim 3 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter:

Regarding Claims 3 and 9-15, the invention as claimed, specifically in combination with the second optical element including planoconvex cylindrical lens consisting of a flat surface on a side of the lens on which the parallel light from said first optical element is incident and a convex spherical surface on the other side of the lens, is not disclosed or made obvious by the prior art of record.

***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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Shimomura et al. US Patent No. 5,479,010, teaches an optical encoder having a first optical element reflecting light from a light-emitting element and the second optical element reflecting parallel light from the first optical element onto an optical grating.

Clark et al. US Patent No. 4,952,946, teaches an optical position detecting apparatus with a first reflective surface and a second reflective surface for a light beam.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen Yam whose telephone number is (571)272-2449. The examiner can normally be reached on Monday-Friday 8:30am-5pm.

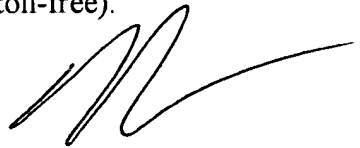
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (571)272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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THANH X. LUU  
PATENT EXAMINER